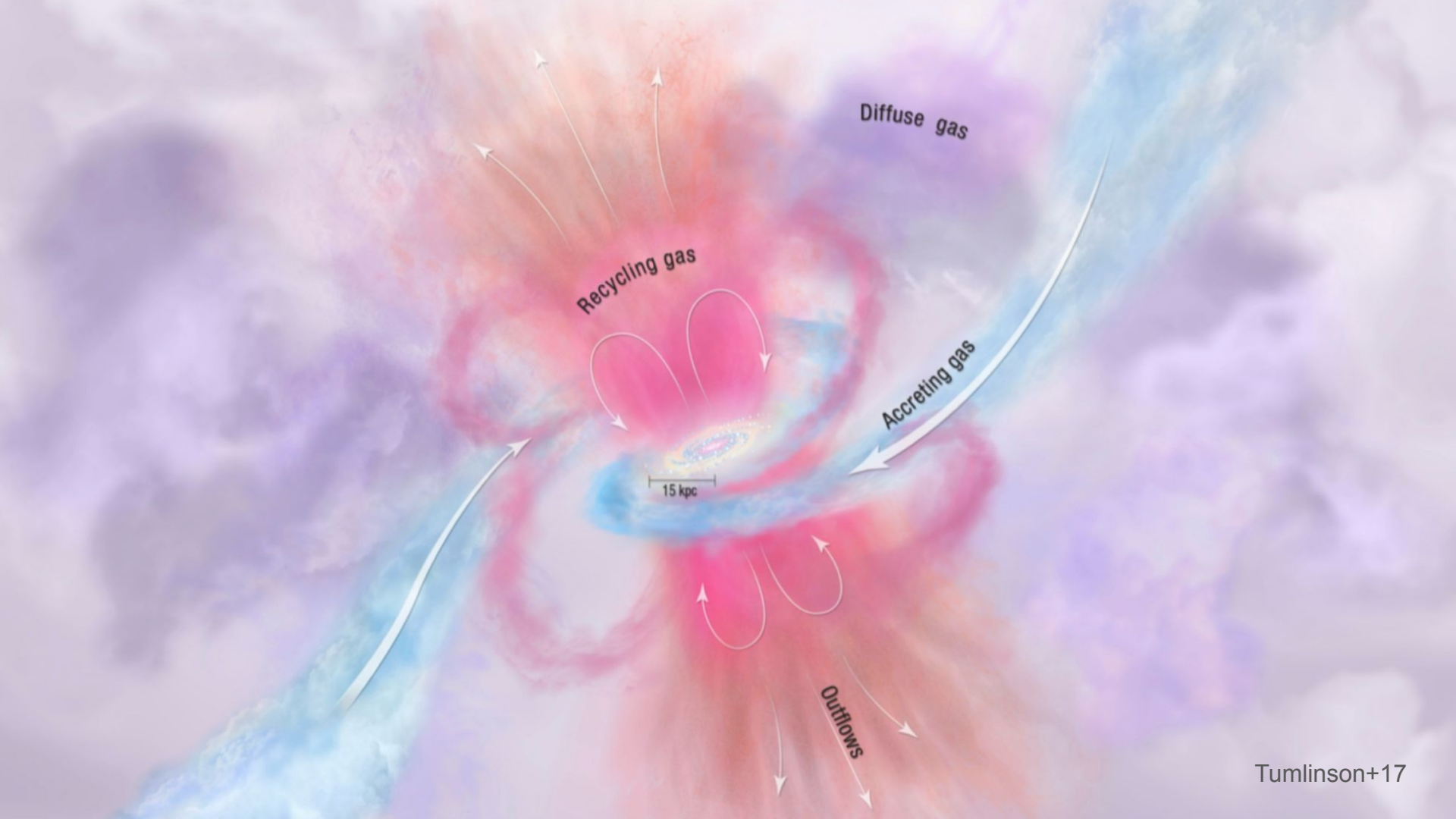


Galaxy evolution & AGN

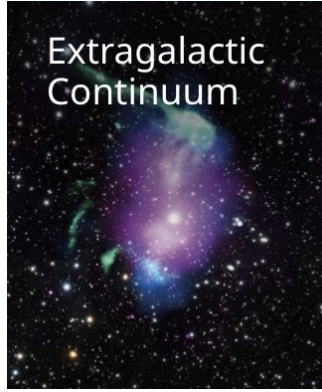
Paolo Serra

INAF - Osservatorio Astronomico di Cagliari



Galaxy Evolution & AGN across the SKA SWGs

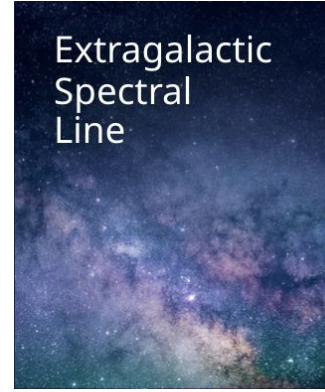
Extragalactic
Continuum



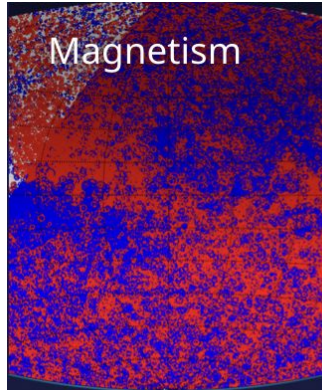
HI Galaxy
Science



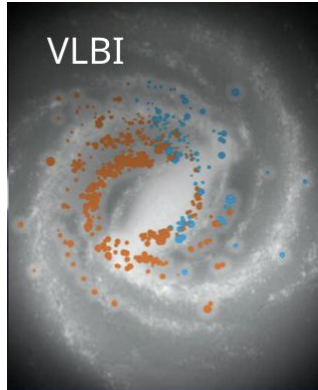
Extragalactic
Spectral
Line



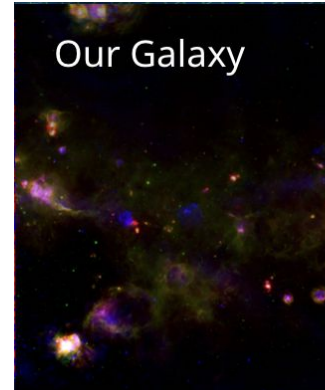
Magnetism



VLBI

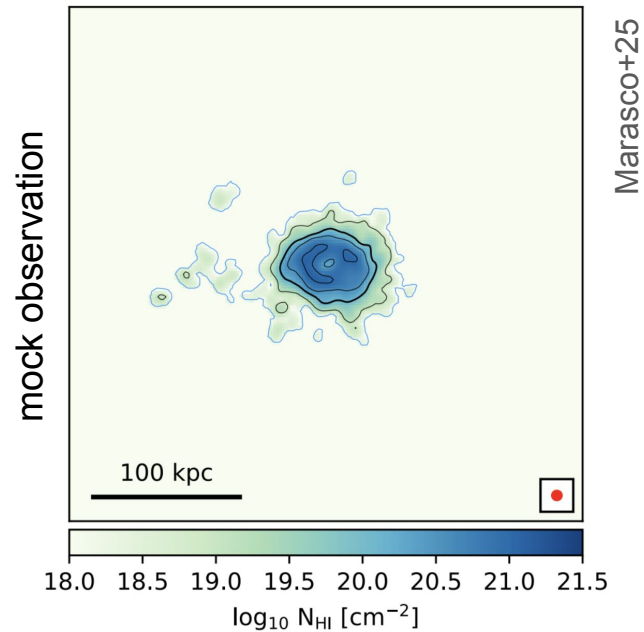
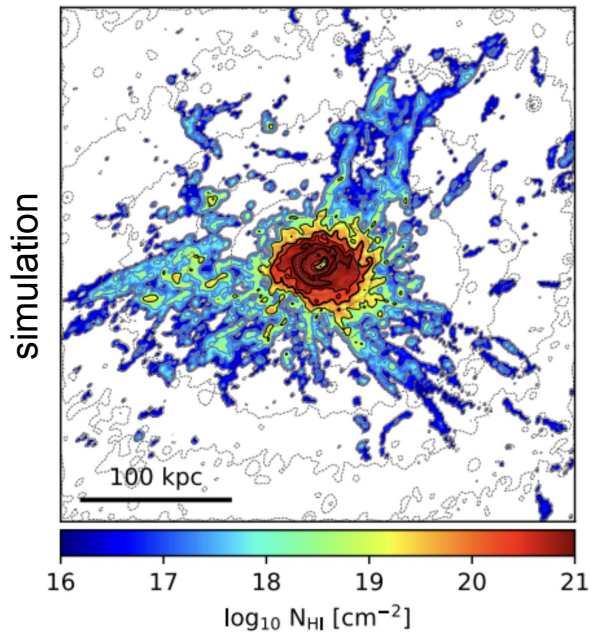


Our Galaxy



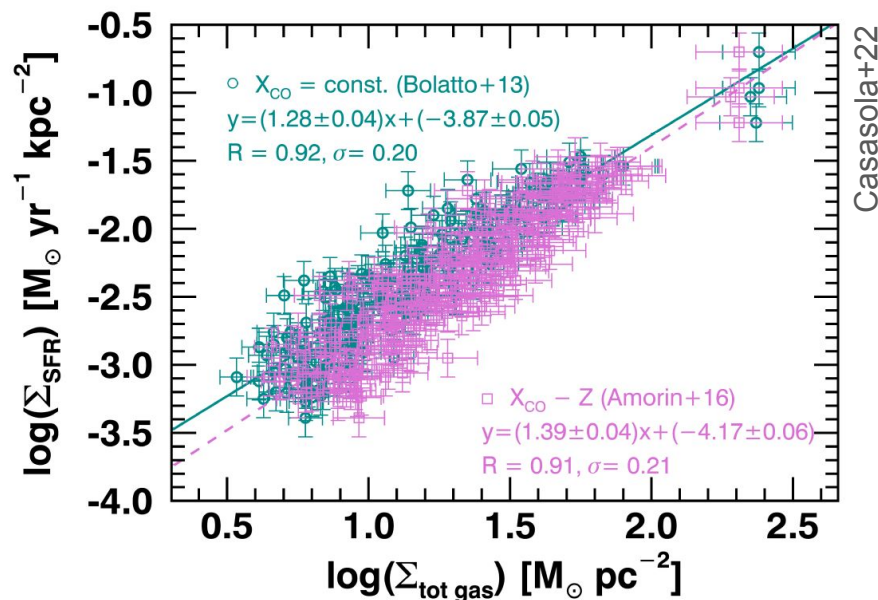
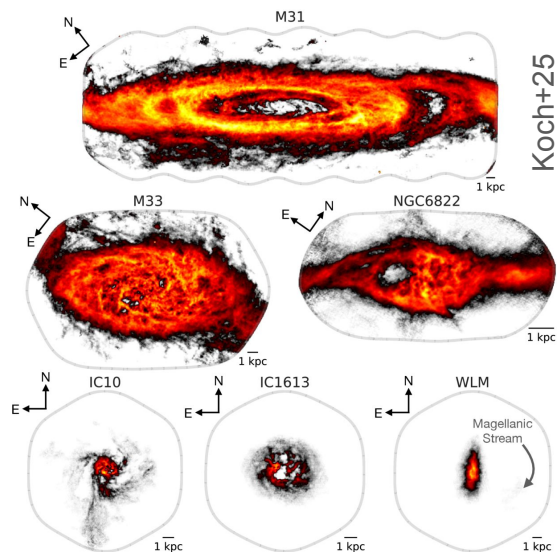
Gas accretion

Not (yet) observing the accreting HI predicted by simulations



ISM physics and star formation

Pushing high-res studies from a few Mpc to a few 10's Mpc distance:
CNM/WNM balance, SF, SNe feedback, cosmic ray transport, magnetic fields

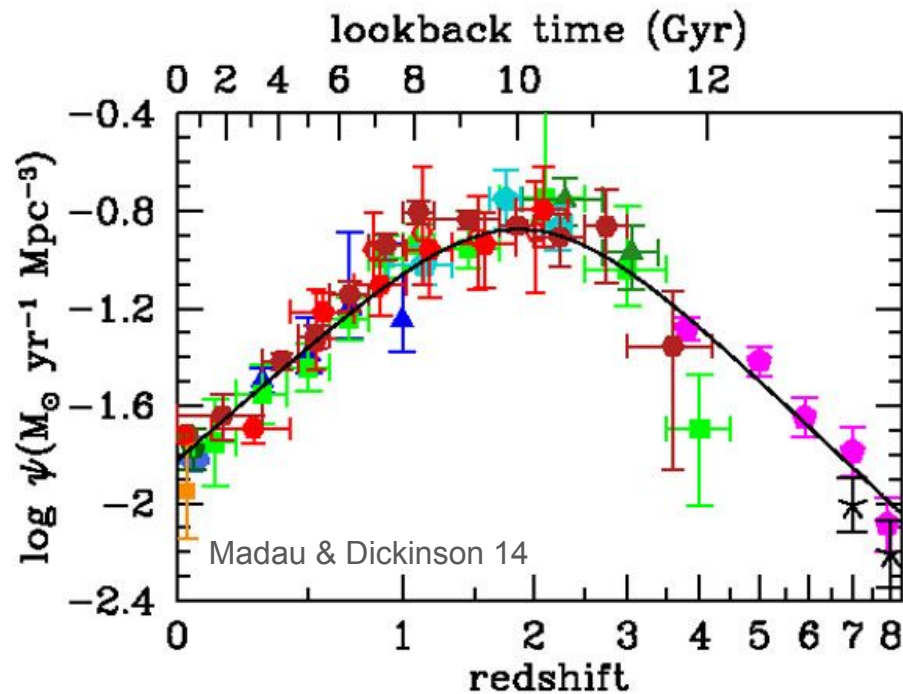


AA* @ Görlitz: Moldon+

AA4 SKA chapter: Rosolowsky+, Miville-Deschênes+

Talks by Paladino, Casasola, Mininni

Galaxy quenching



SKA probes some of the key processes that stop star formation in galaxies

- SNe and AGN feedback
- Interaction with the environment

Strong Italian involvement

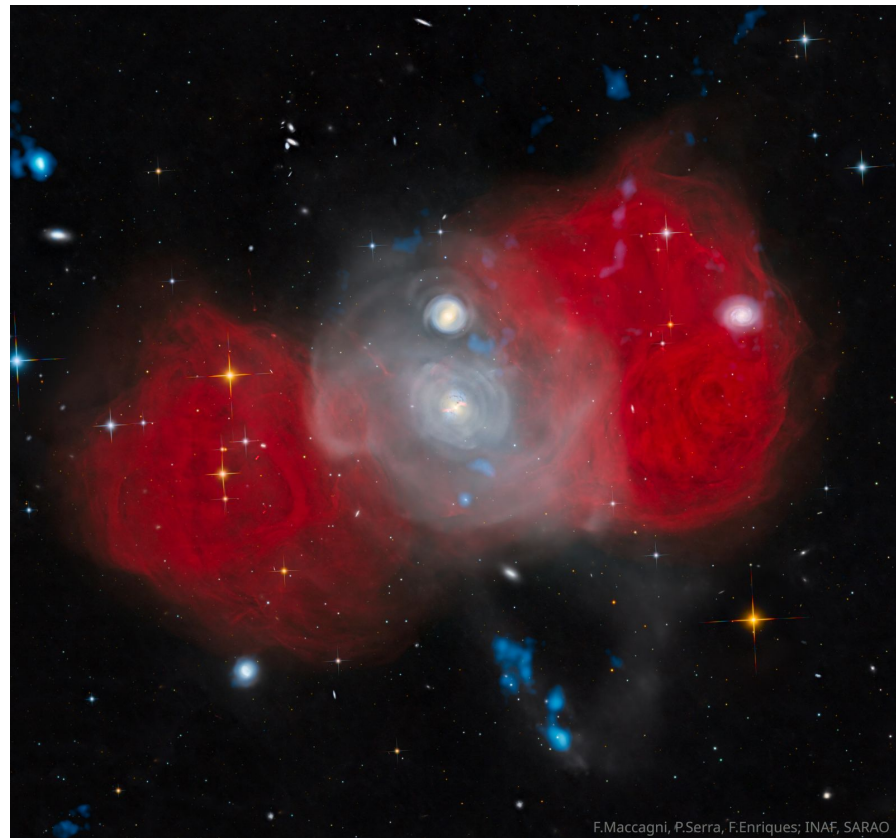
AGN feeding and feedback

Detailed observations of nearby galaxies to

- observe feeding and feedback
- infer duty cycles
- detect compact / low-power sources
- measure variability

AA* @ Görlitz: Maccagni+, Brienza+, Baldi+, Ubertosi+, Fanelli+, ...

AA4 SKA chapter: Maccagni+, Pasini+, Baldi+, ...



Maccagni+20

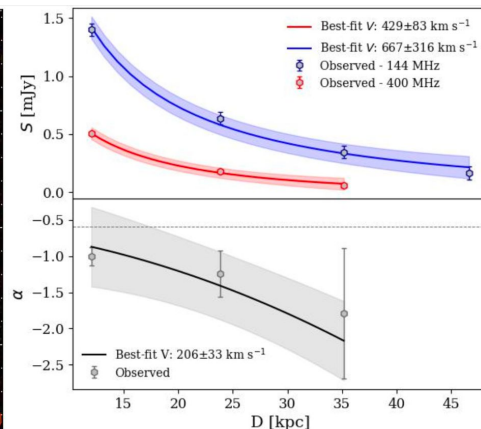
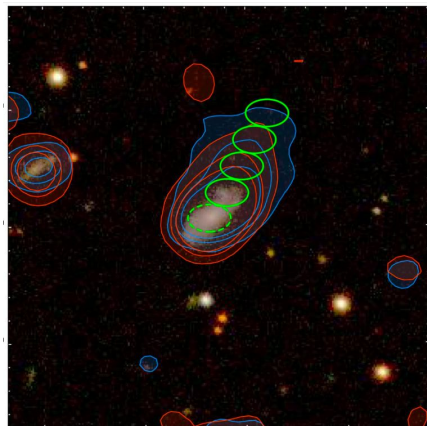
Talks by Maccagni, Ruffa, Panessa, Orienti, Brienza, Gandossi, Stella, Baldi, ...

Interaction with the environment

Tidal and hydrodynamical interactions lead to quenching in dense environments

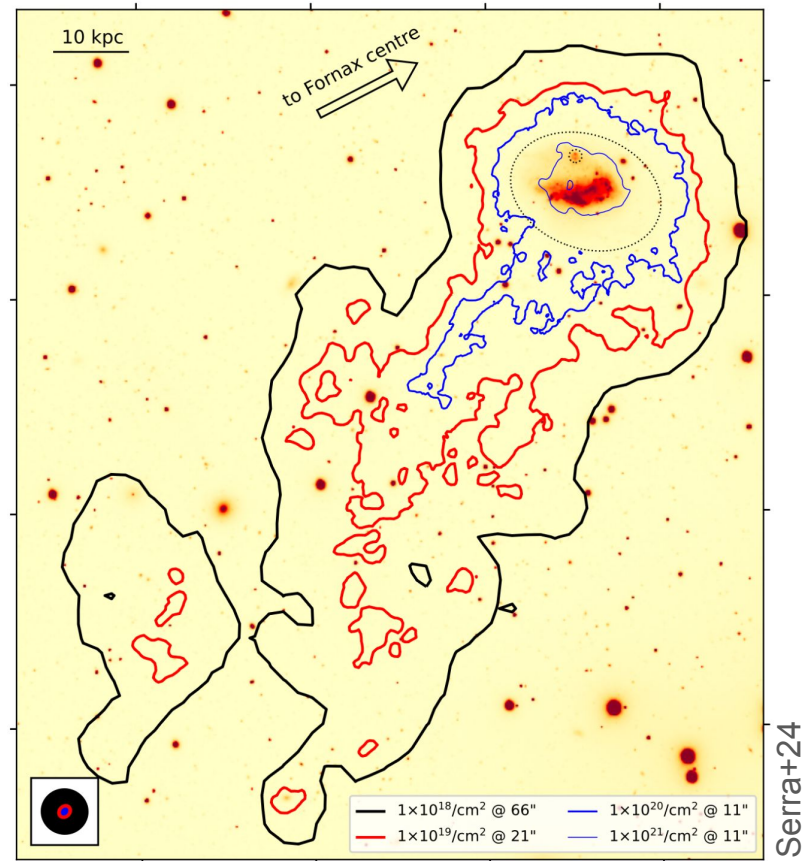
With the SKA larger cosmic volumes and more diverse environments

Ignesti+23



AA* @ Görlitz: Ramatsoku+, Ignesti+

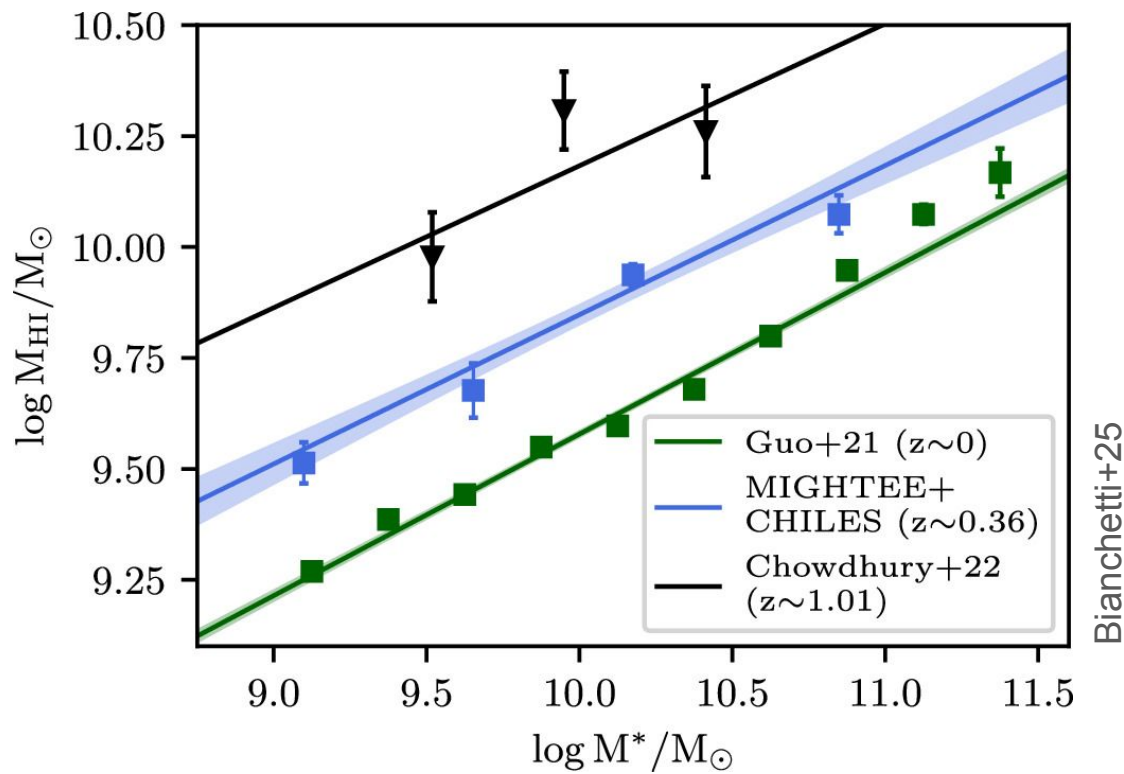
AA4 SKA chapter: Ramatsoku+, Ignesti+



Serra+24

Talks by Rajohnson, Ignesti

Demographics and evolution: ISM



AA* @ Görlitz: Arabsalmani+, Bianchetti+

AA4 SKA chapter: Pan+, Deg+

Talk by Bianchetti

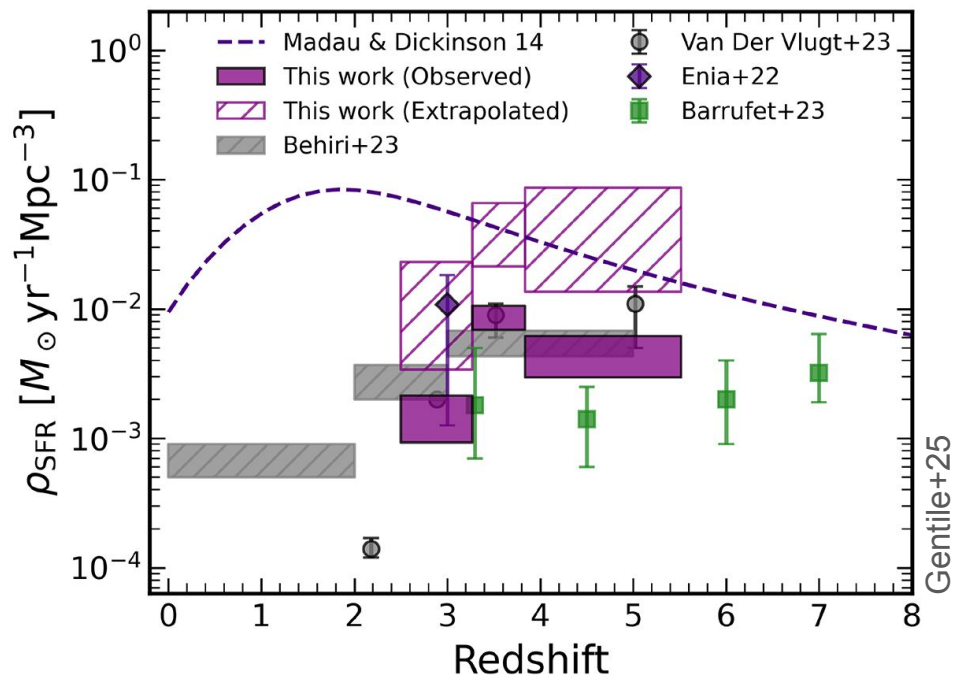
Demographics and evolution: star formation and AGN

Radio continuum = no dust obscuration

Unbiased source counts, resolved
imaging and radio SEDs down to low L

Evolution with time and position in the
cosmic web of:

- Star formation rate
- BH accretion rate and feedback
- Radio continuum - FIR relation



AA* @ Görlitz: Prandoni+, Spingola+, Bruni+, Tabatabaei+, ...
AA4 SKA chapter: Mazzolari+, Bruni+, Prandoni+, Tarchi+,
Kondapally+, Afonso+, D'Amato+, Tabatabaei+, Hardcastle+, ...

*Talks by Bruni, Behiri, Delvecchio, Peluso,
Fanelli, Magliocchetti, Santhosh, Pannella*

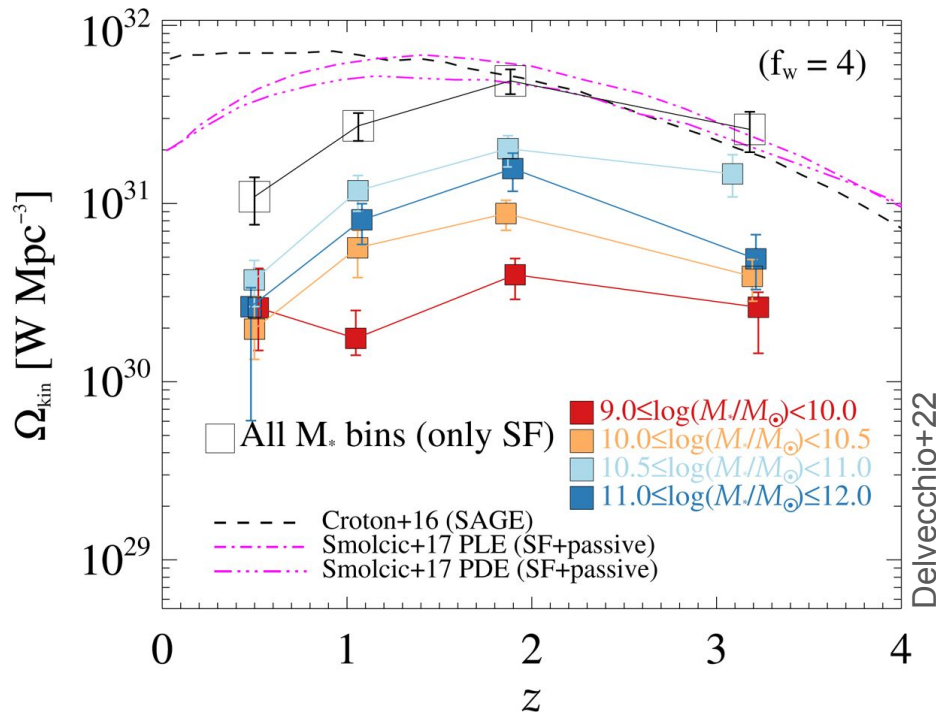
Demographics and evolution: star formation and AGN

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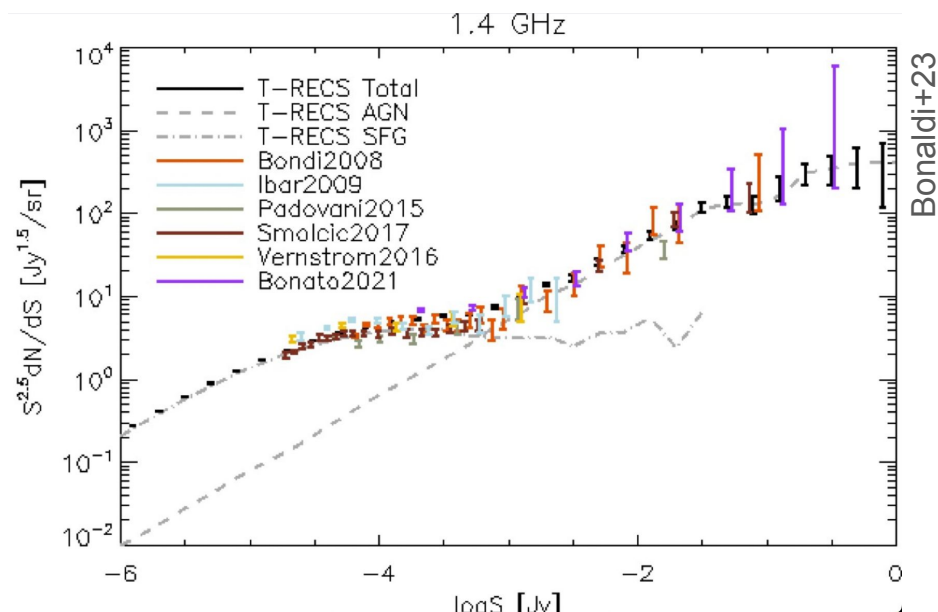
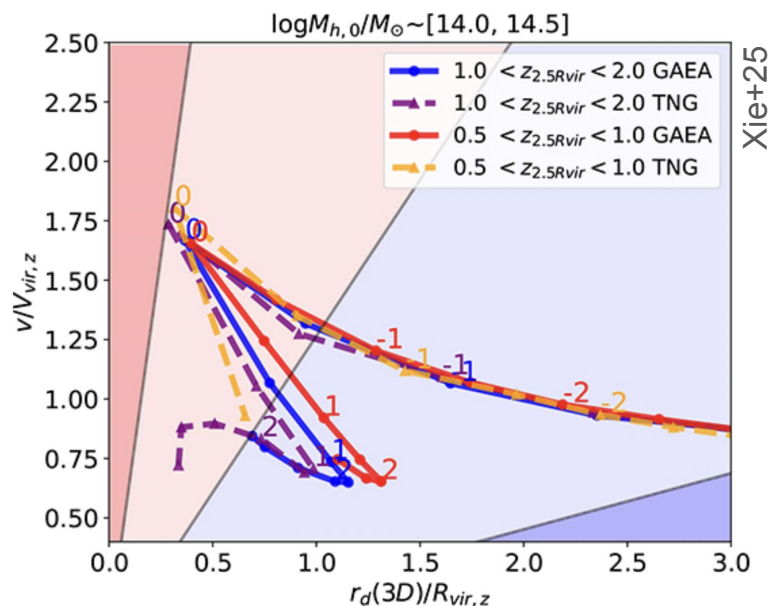


AA* @ Görlitz: Prandoni+, Spingola+, Bruni+, Tabatabaei+, ...
AA4 SKA chapter: Mazzolari+, Bruni+, Prandoni+, Tarchi+,
Kondapally+, Afonso+, D'Amato+, Tabatabaei+, Hardcastle+, ...

*Talks by Bruni, Behiri, Delvecchio, Peluso,
Fanelli, Magliocchetti, Santhosh, Pannella*

Models

Predictions, survey preparation, interpretation of results, ...

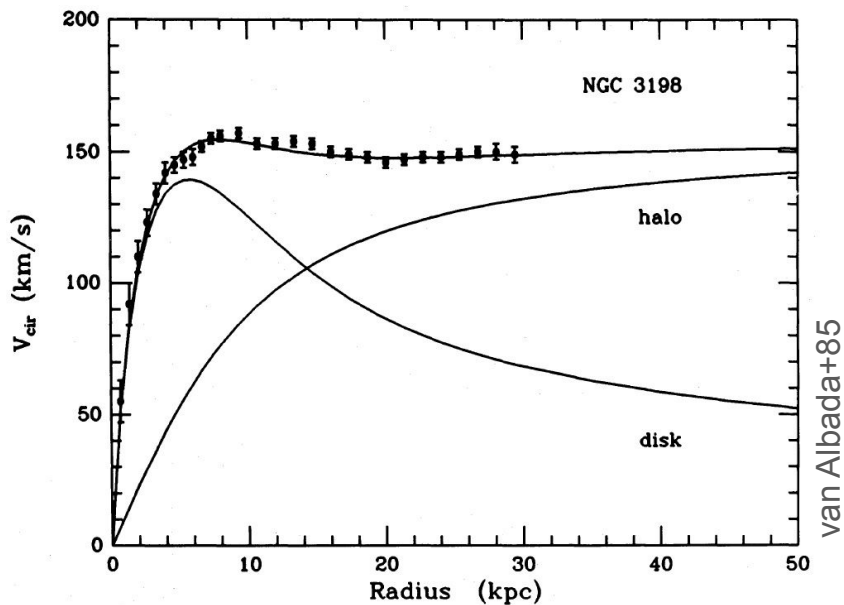


AA* @ Görlitz: Lagos+, Ronconi+, ...

AA4 SKA chapter: Lagos+, Giulietti+

See talks by Bisigello, Giulietti

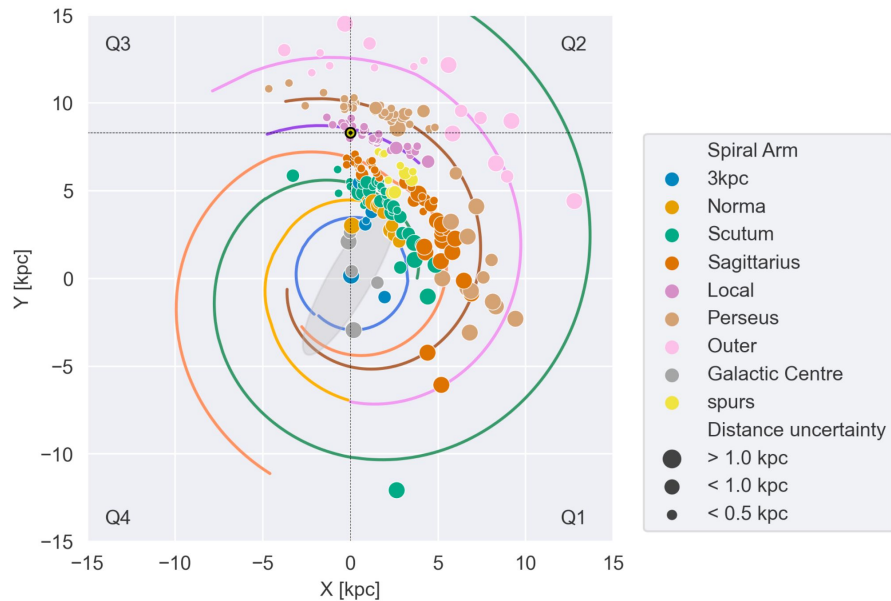
The structure of galaxies



HI rotation curves: from 100's (now) to
1000's (pathfinders) to 10,000's (SKA)

AA* @ Görlitz: Haubner+

AA4 SKA chapter: Lelli+



~ 1000 southern masers to complete the
current Milky Way model

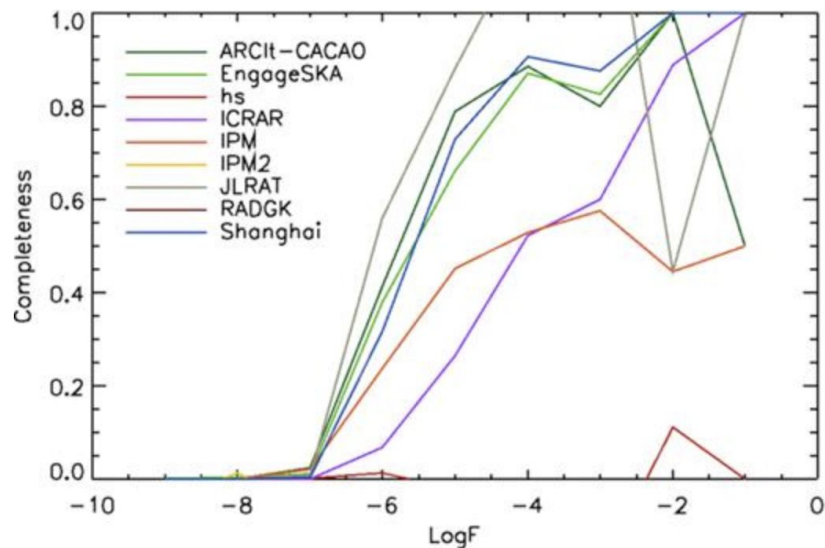
Talks by Lelli, Rygl

Enjoy today's session on
Galaxy Evolution and AGN!

Pipelines and SKA Data Challenges

Experience with processing of large data volumes on SRC-like facilities

Bonaldi+21, continuum source finding



Hatley+23, HI source finding

